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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,191	02/24/2004	Cyprian E. Uzoh	037323.49308C1	1093

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EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1742

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/05/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/05/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary

Application No.

10/784,191

Applicant(s)

UZOH ET AL

Examiner

William T. Leader

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-45 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 30-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 2/24/2004; 10/2/2006.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 41 recites the limitation ""the wafer"" in line 5. There is insufficient antecedent basis for this limitation in the claim. Line 2 recites a surface of a substrate but does not specify that the substrate is a wafer.

Claim Objections

3. Claim 41 is objected to because of the following informalities: In line 5 "a upper" should be --an upper--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 30, 33-35, 38, 39, 41 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Mayer et al (6,527,920).

6. The Mayer et al patent is directed to a method for electroplating metal onto substrates and electropolishing metal layers on substrates (column 1, lines 14-15). One embodiment of the apparatus is shown in figure 4B. The apparatus includes housing 474 with an internal volume divided by a membrane 468 which serves as a filter into first chamber 462 which contains an anode electrode (shown in figure 5b) and a second chamber between membrane 468 and diffuser membrane 466. Thus all apparatus limitations recited in the preamble of instant claim 30 are disclosed by Mayer et al. The method of using the apparatus includes the steps of supplying solution into the first chamber 462 through first flow channel 484; supplying solution into the second chamber 478 through second flow channel 460, and flowing solution from the second chamber towards the surface of the substrate to be processed. See column 13, line 27 to column 14, line 58. All process steps recited in instant claim 30 are taught by Mayer et al.

7. Independent claim 35 adds the limitation that solution is flowed out of the first chamber in a controlled manner. Mayer et al discloses flowing solution out of chamber 462 through line 488. Flow is controlled by pump 490. Independent claim 41 additionally recites that the second chamber is separated from the surface by an upper filter. Mayer et al shows that the upper bound of the second chamber is formed by diffuser membrane 466 which functions as a filter. Thus, the additional limitations recited in claims 35 and 41 are disclosed by Mayer et al.

8. With respect to dependent claims 33 and 39, Mayer et al discloses that the major chamber of the electroplating compartment contains a plating bath (column 9, lines 19-21). With respect to claim 34, as noted above Mayer et al teach that solution is flowed out of chamber 462 through

line 488, the flow being controlled by pump 490. With respect to claim 38, Mayer et al disclose the invention relates to electroplating or electropolishing a silicon wafer (column 1, lines 14-18). With respect to claim 45, Mayer et al teach the use of a catholyte filter (column 10, lines 57-61) and anolyte filter 492 (column 14, line 6-8).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 31, 32, 36, 37, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (6,527,920).

12. Claims 31, 32, 36, 37, 42 and 43 relates to the relative flow rates of the solution being supplied into the first and second chambers. The Mayer et al patent appears to be silent as to

relative flow rates. However, the flow rate of the plating solution is a result effective variable. Optimization of the flow rates would have been a matter of routine optimization within the skill of the ordinary worker in the art. Choice of a higher flow rate into the second chamber would have been obvious because it would have provided increased flow to the surface of the wafer to replenish metal ions being deposited on the wafer.

13. Claims 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (6,527,920) in view of Talieh (6,176,992).

14. Mayer et al is taken as above. Claim 40 recites that the solution is a polishing solution, while claim 44 recites flowing the solution through a polishing pad. The Talieh patent is directed to a modified plating solution which allows simultaneous plating and polishing to occur. See the abstract. Talieh also discloses the use of a polishing pad 32 (figure 1B) to assist in polishing. It would have been obvious at the time the invention was made to have utilized a solution which allows polishing as well as electroplating and to have provided a polishing pad in the method of Mayer et al because electroplating and polishing would have been carried out simultaneously as taught by Talieh providing a more efficient process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WL
William Leader
March 26, 2007

R
ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700